

LIFT & STEM CALCULATIONS

CONTRACTOR'S NAME: RENAUD BROS., INC.
JOB SITE: Peru, Vermont
QUOTE #: WQ17-H-28960C
JOB #: M028960
ITEM #: 0
REVISION #: 0
DATE: 8/22/2017
BY: AMW

GATE IDENTIFICATION: RB-17-0487
GATE DESCRIPTION: 72 x 72 S-5000 ; GATE WEIGHT: 3611 LBS
MAXIMUM OPERATING HEADS: SEATING = 15 FT; UNSEATING = 15 FT
DIFFERENTIAL = 15 FT
SOURCE OF OPERATING HEADS: ESTIMATED
STEM DIAMETER: 2.500 IN; THREADED: 2.5 DIA. ; 1/4 PITCH ; 1/4 LEAD; LEFT
HAND; STUB ACME
STEM LENGTH: 135.00 IN; STEM WEIGHT: 188 LBS

LIFTING FORCE CALCULATIONS & OPERATING SPECIFICATIONS

REQUIRED OPERATING FORCE: $F_o = W \cdot A \cdot H \cdot f_o + W_g + W_s$

$$F_o = 62.4 \frac{\text{LBS}}{\text{FT}^3} \cdot 36.00 \text{ FT}^2 \cdot 15.00 \text{ FT} \cdot 0.35 + 3611 \text{ LBS} + 188 \text{ LBS} = 15,593 \text{ LBS}$$

LIFT USED: 3R7/AS3-12:1

RATED LIFT CAPACITY: 24,545 LBS @ 40 LBS INPUT ON 15" HAND CRANK

STEM CAPACITY CALCULATIONS

CALCULATED FROM EULERS EQUATION, $P_c = \frac{2\pi^2 EA}{(L/r)^2}$

SOLID PORTION:

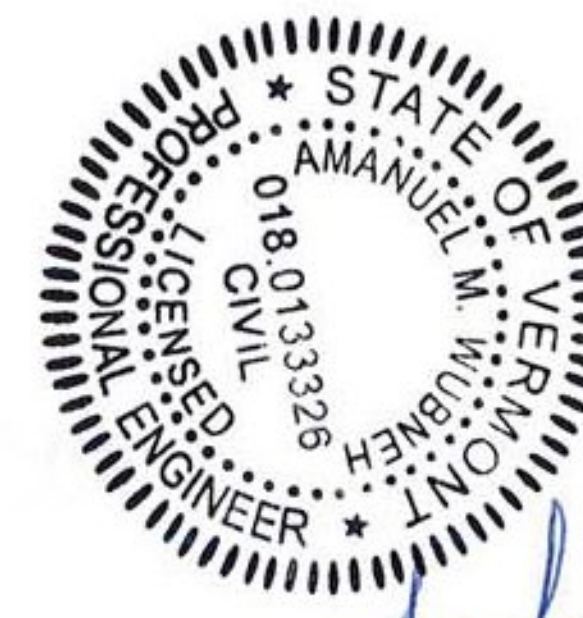
$$\text{DIA.} = 2.500 \text{ IN; AREA} = 4.91 \text{ IN}^2; \text{LG}_{\text{max.}} = 125.00; L/r = 200.00; P_c = 66,861 \text{ LBS}$$

THREADED PORTION:

$$\text{DIA.} = 2.359 \text{ IN; AREA} = 4.37 \text{ IN}^2; \text{LG}_{\text{max.}} = 117.95; L/r = 200.00; P_c = 59,520 \text{ LBS}$$

$$\text{SAFETY FACTOR} : S_f = \frac{P_{c \text{ MIN}}}{L_c} = \frac{59,520 \text{ LBS}}{24,545 \text{ LBS}} = 2.43$$

Approved AsNoted	
BY:	Ken Upmal
DATE:	11/29/2017
RESUBMIT:	NO
RECEIVED:	November 13, 2017
CD BY:	DV/BK (Green Int'l)
STATE OF VERMONT AGENCY OF TRANSPORTATION	



[Handwritten Signature] 11-7-2017